

User Manual

Manual/Semi-automatic

CV — Tool

CV.6.01, Rev. C, May 1997

Thank you for purchasing Persys Manual/Semi-automatic CV—Tool.

This manual has been written to provide all relevant instructions for installing, operating and maintaining your CV—Tool. We recommend you read these instructions before attempting to install or operate your CV—Tool to ensure the maximum service life of your equipment.

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Principle Changes in Present Revision (C)

1. The 8" CV tool is presented in this revision. Specifications, operation and spare parts sections are revised accordingly.
2. Several drawings are revised in the operation chapter to present a more accurate view of the CV tool.

1.0 INTRODUCTION

1.1 Scope of the Manual

This manual provides the installation, operation and maintenance procedures of the CV Manual and Semi-automatic Tools.

1.2 Description

1.2.1 Overview

The CV—Mask is an aluminum mask with specially shaped holes. It is attached to the wafer with Stainless Steel clips by means of a CV—Tool.

The wafer/mask/clips assembly travels through semi-automatic transfer machines in the same way as the regular process wafer.

Disposable one-time-use ensures a constant and well-shaped dot size of 0.8mm, 1.2mm or 1.6mm.

1.2.2 Manual CV—Tool (Fig. 1—1)

The Manual CV—Tool consists of a wafer shaped Teflon base and an anodized Aluminum cover with a Teflon butterfly. Its purpose is holding the wafer in position while attaching the four Stainless Steel clips.

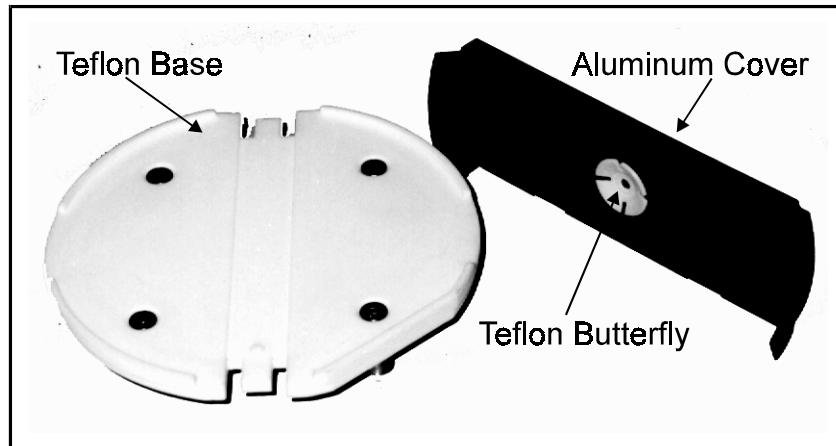


Figure 1 — 1 Manual CV—Tool

1.2.3 Semi-automatic CV—Tool (Fig. 1–2)

The Semi-automatic CV—Tool consists of a wafer shaped, sliding Teflon base with two stands on either sides. Its purpose is positioning the clips cassettes in place. The tool also includes two trays for collecting used clips, and two Teflon grippers which are used for removing the used clips.

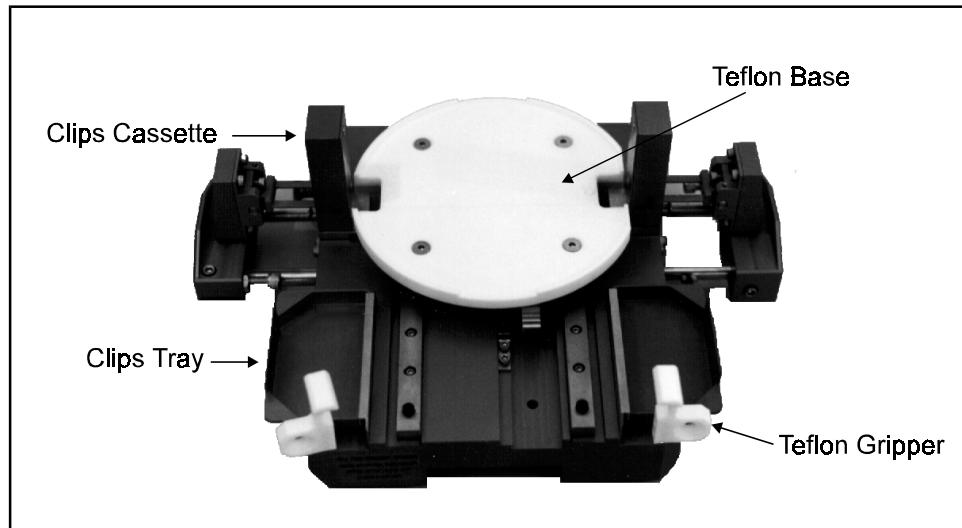


Figure 1 — 2 Semi-automatic CV—Tool

2.0 TECHNICAL DATA

2.1 CV—Mask and Clips

Material (Mask)	Aluminum 6061 (5052)
Material (Clips)	Stainless Steel
Mask Dimensions:	
Width	20mm (25mm for 8" mask)
Thickness	1mm
Length (mm):	

		4"	5"	6"	8"
No flats	LR	85.40	110.40	135.50	185.60
Minor flat	LM	85.40	108.20	133.30	X
Major flat	SR	82.75	107.00	130.00	X
Major & Minor flats	SM	82.75	105.70	127.80	X

Number of dots:

		4"	5"	6"	8"
No flats	LR	6	9	11	17
Minor flat	LM	6	9	11	X
Major flat	SR	6	9	11	X
Major & Minor flats	SM	6	9	11	X

2.2 Manual CV—Tool

Materials: Anodized Aluminum, 6061 (5052) Teflon and Stainless Steel.

Dimensions (mm) & approximate weight (kg):

	Length	Width	Height	Weight
4"	120	107	13	0.170
5"	143	132	43	0.250
6"	170	157	43	0.350
8"	222	208	45	0.500

2.3 Semi-automatic CV—Tool

Materials: Anodized Aluminum 6061 (5052), cleanroom certified plastics and Stainless Steel.

Dimensions (mm):

	Length	Width	Height
4"	210	265	155
5"	240	305	165
6"	230	310	155
8"	270	370	160

Weight ~ 3 – 5 kg

3.0 INSTALLATION AND OPERATION

3.1 Unpacking

3.1.1 CV—Masks

CV Masks are placed in plastic boxes, with 50 units in each box. Each box of 50 units includes 200 clips which are attached to plastic strips for the manual CV—Tool, or in two cassettes for the semi-automatic CV—Tool.

3.1.2 Manual CV—Tool

Assembled cover on base.

3.1.3 Semi-automatic CV—Tool

CV—Tool assembly, clips tray and Teflon grippers.

3.2 Installation

The CV—Tool, Manual or Semi-automatic, arrives fully calibrated. However, if any drift in calibration has occurred, you should calibrate the CV—Tool as specified in section 4.0.

3.2.1 Manual CV—Tool

No installation required.

3.2.2 Semi-automatic CV—Tool

See Fig. 4–1, pg. 15 for reference.

1. Place the unit on a work bench so it is easily accessible with both hands from both sides.
2. Set the clips tray (1) and Teflon grippers (2) in place on both sides of the CV Tool.
3. Position the clips cassette (3):

Unpack cassettes and remove tape.

Place cassette on leading pin with cover and screws facing inward.

Insert the pressure pin (4) and push the cassette into place.

Release the plastic insert from the cassette and push the cassette fully into position.

4. Release the pressure pin.
5. Repeat the above steps on the other side with the second clips cassette.

3.3 Operation

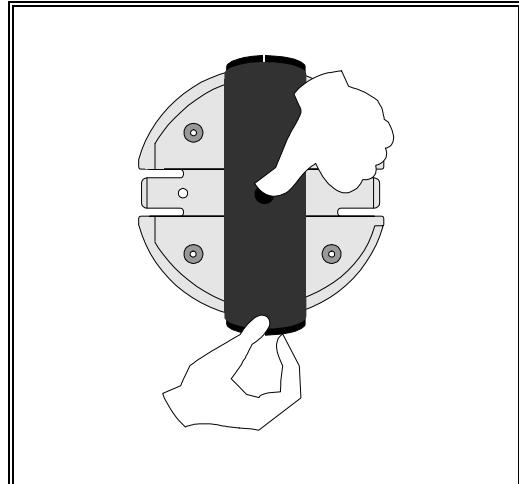
ATTENTION

- Be sure to wear plastic cleanroom gloves when operating the CV—Tool.
- Always use a vacuum wand when handling wafers.

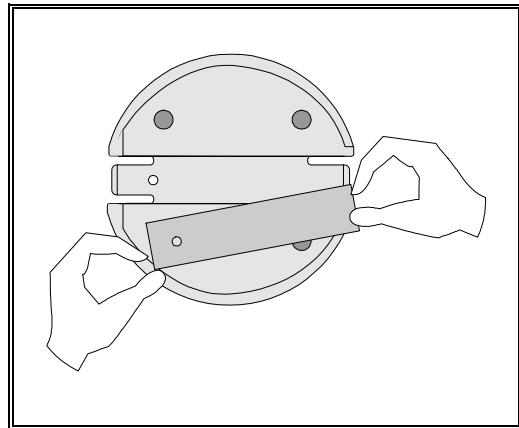
3.3.1 Manual Tool

Positioning Mask

1. Remove the cover, lifting one side first, by placing your thumb on the knob and lifting the cover with your fingers.



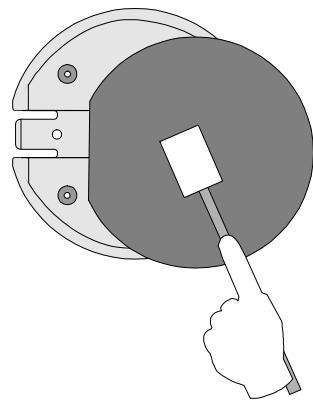
2. Position the mask, face down, on the Teflon base, in the groove, and fit the large hole on the appropriate pin.



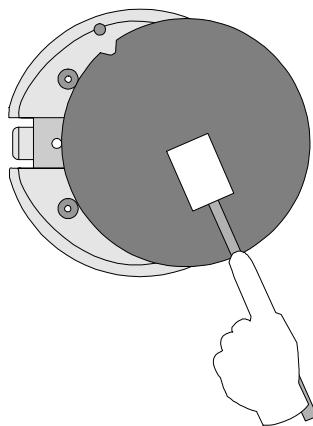
3. Position the wafer on top of the mask.

Figure a shows a wafer other than 8". Figure b shows an 8" wafer – the notch sits on the Teflon plate notch fixer.

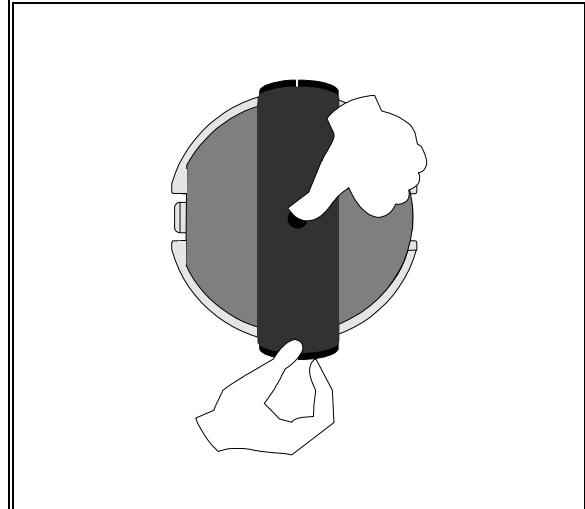
(a)



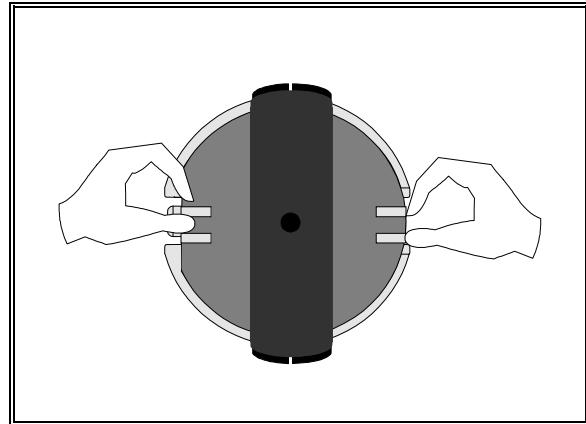
(b)



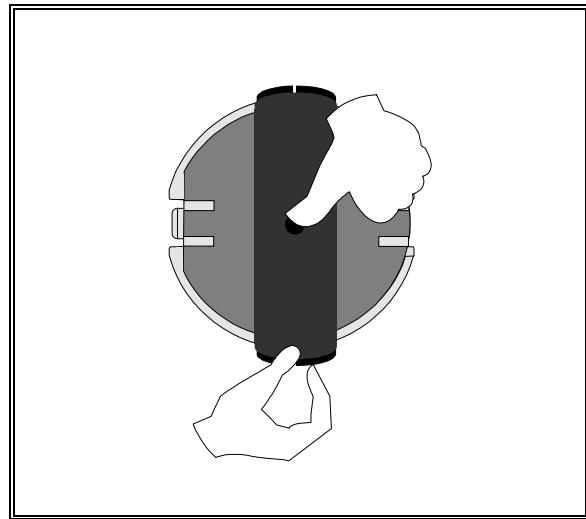
4. Click the cover into place one side at a time.



5. Insert the four Stainless Steel clips to hold the mask on the wafer.



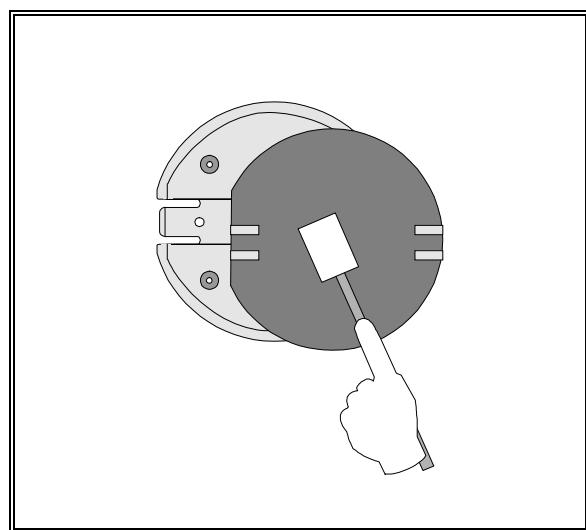
6. Remove the cover by placing your thumb on the knob and lifting the cover one side at a time.



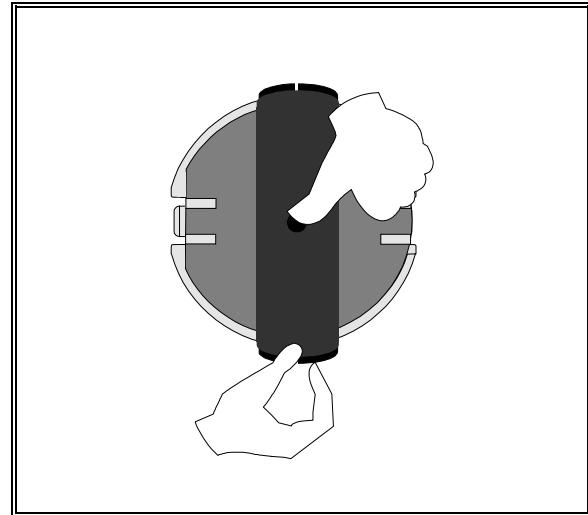
7. The wafer is now ready for sputtering.

Removing Mask after Sputtering

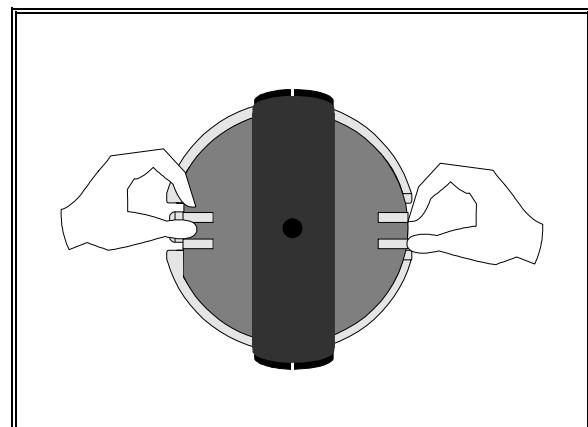
1. Place the wafer–mask set on the base plate with the sputtered side facing down.



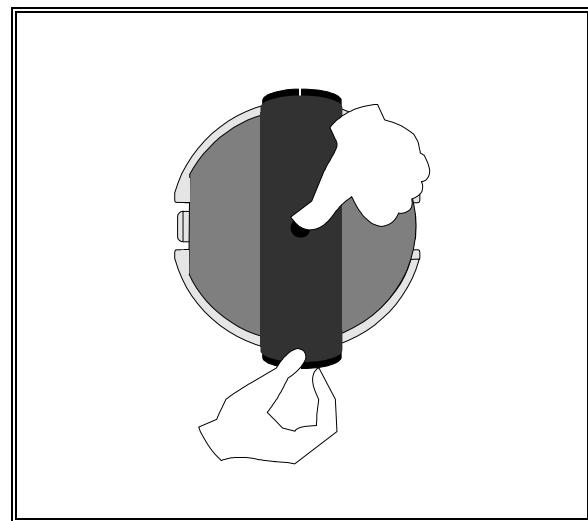
2. Click the cover into place one side at a time.



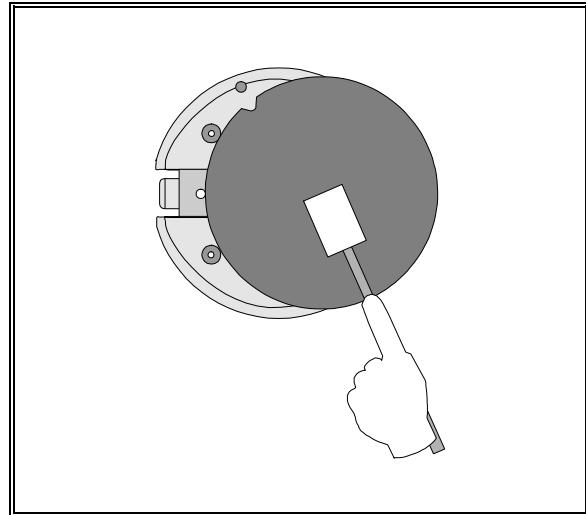
3. Remove the clips.



4. Remove the cover.



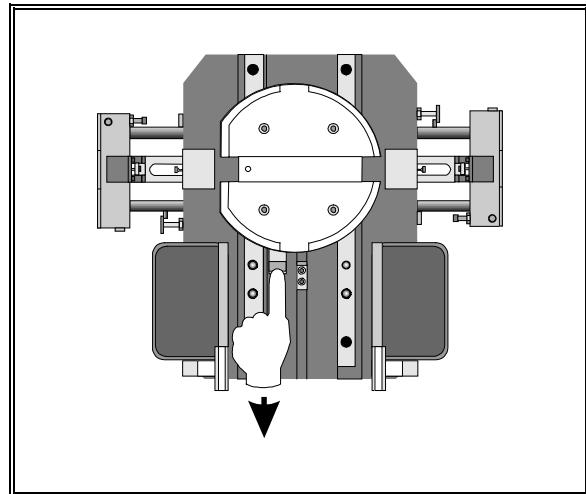
5. Remove the wafer using a vacuum wand and discard the mask.



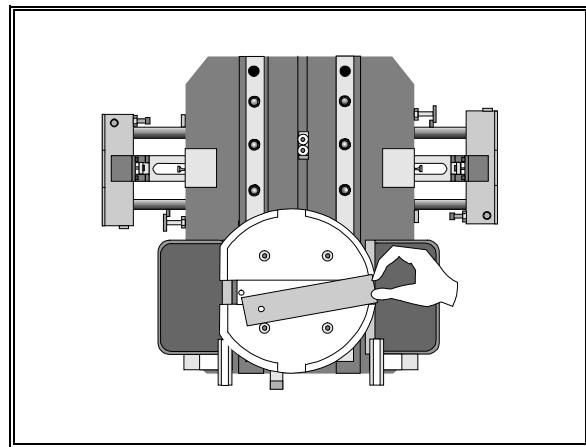
3.3.2 Semi-automatic Tool

Positioning Mask

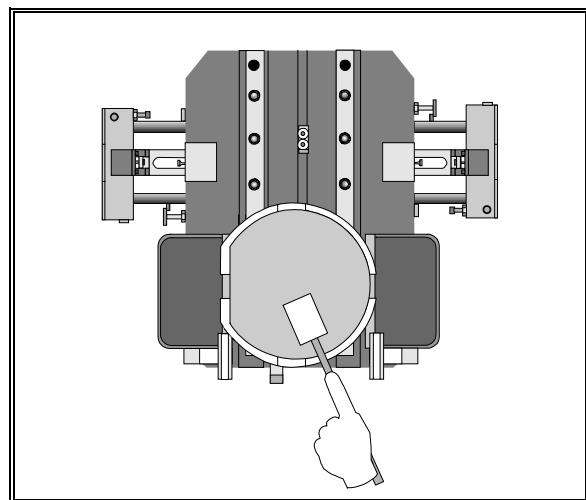
1. Using the moving handle, place the Teflon plate at the front or back of the CV—tool (as is convenient for you) until it reaches the stopper and remains stationary.



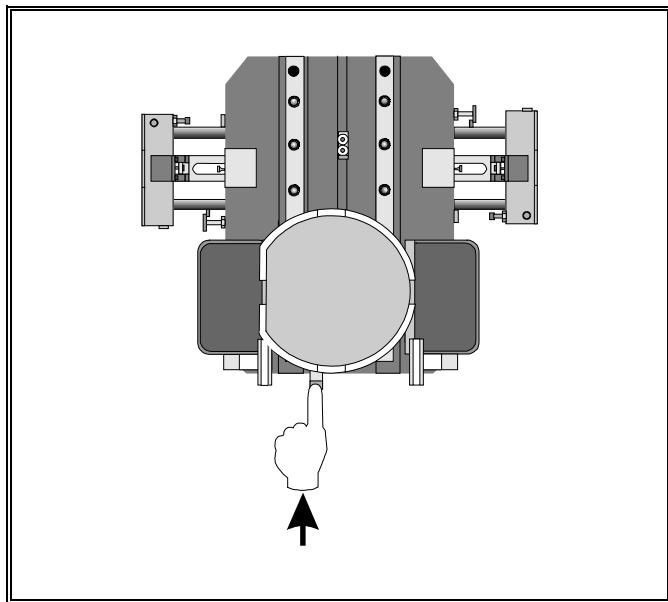
2. Place the mask face down on the Teflon plate in the groove and fit the large hole on the appropriate pin.



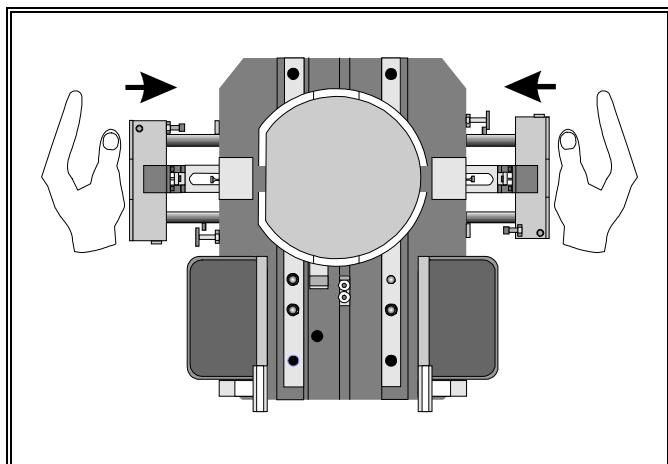
3. Place the wafer face down, so the major flat sits on the Teflon plate major flat. For 8" wafers, the notch sits on the Teflon plate notch fixer.



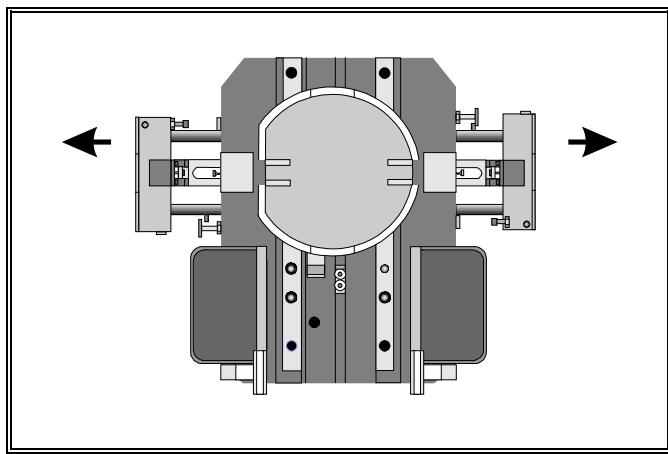
4. If the Teflon plate is not already at the back of the unit, press the moving handle at the front of the plate, pushing it back until it is fixed in the work station.



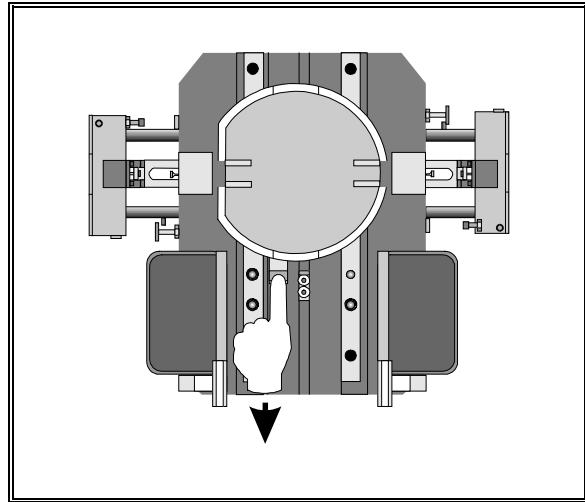
5. Press both cassette holders simultaneously at a reasonable speed so that all four clips will be attached to the wafer.



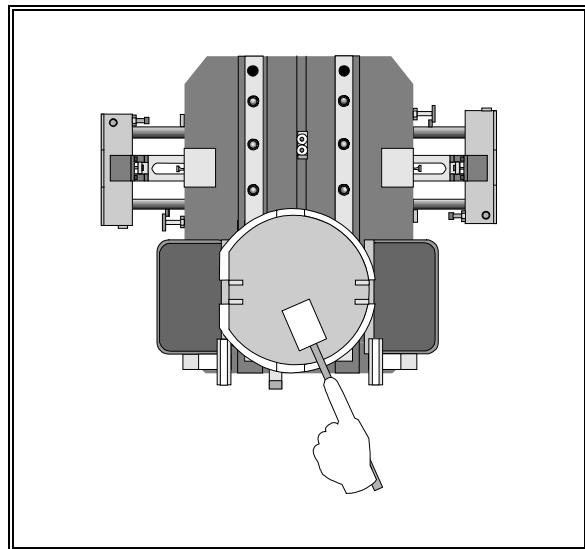
6. Release the cassette holders.



7. Using the moving handle, bring the Teflon plate with the wafer to the front of the CV—Tool until it reaches the stopper and remains fixed.

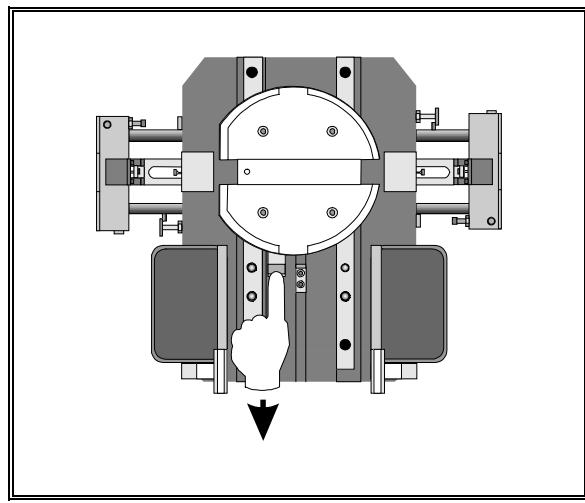


8. Using a vacuum wand, remove the wafer with the mask in place.

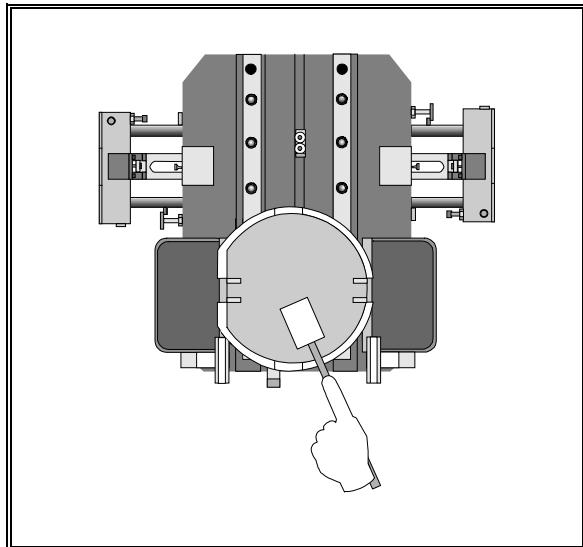


Removing Mask after Sputtering

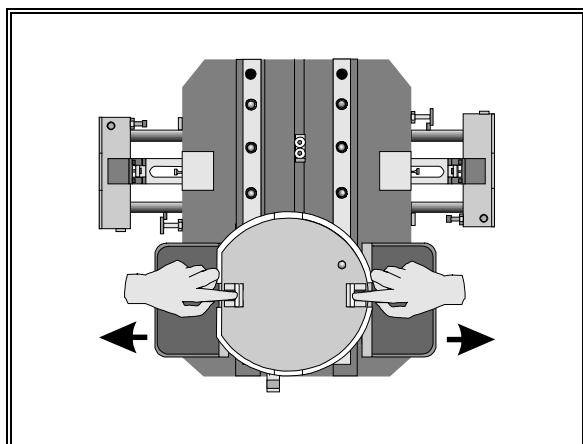
1. Make sure the Teflon plate is at the front of the unit, by pushing the front moving handle and pulling the plate toward you.



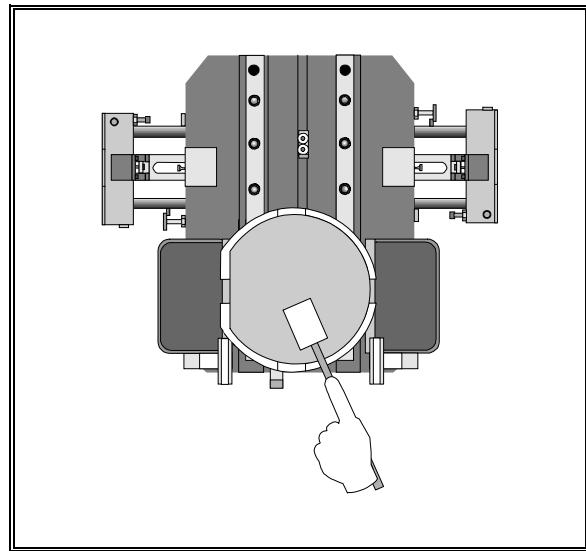
2. Place the wafer with the mask on the Teflon plate so the major flat of the wafer is seated above the Teflon plate flat.



3. Make sure the mask is in position by moving it slightly from side to side so it feels in place.
4. Pull out the Stainless Steel clips with the Teflon grippers horizontally such that they do not rub the back of the wafer.



5. Remove the wafer using a vacuum wand and discard the mask.



6. Return the Teflon grippers to their place.

4.0 CALIBRATION – Semi-automatic CV—Tool

4.1 Preliminary Steps

CV—Tool calibration is to be performed only if any drift in calibration has occurred (see Fig. 4—1 for reference throughout the calibration procedure).

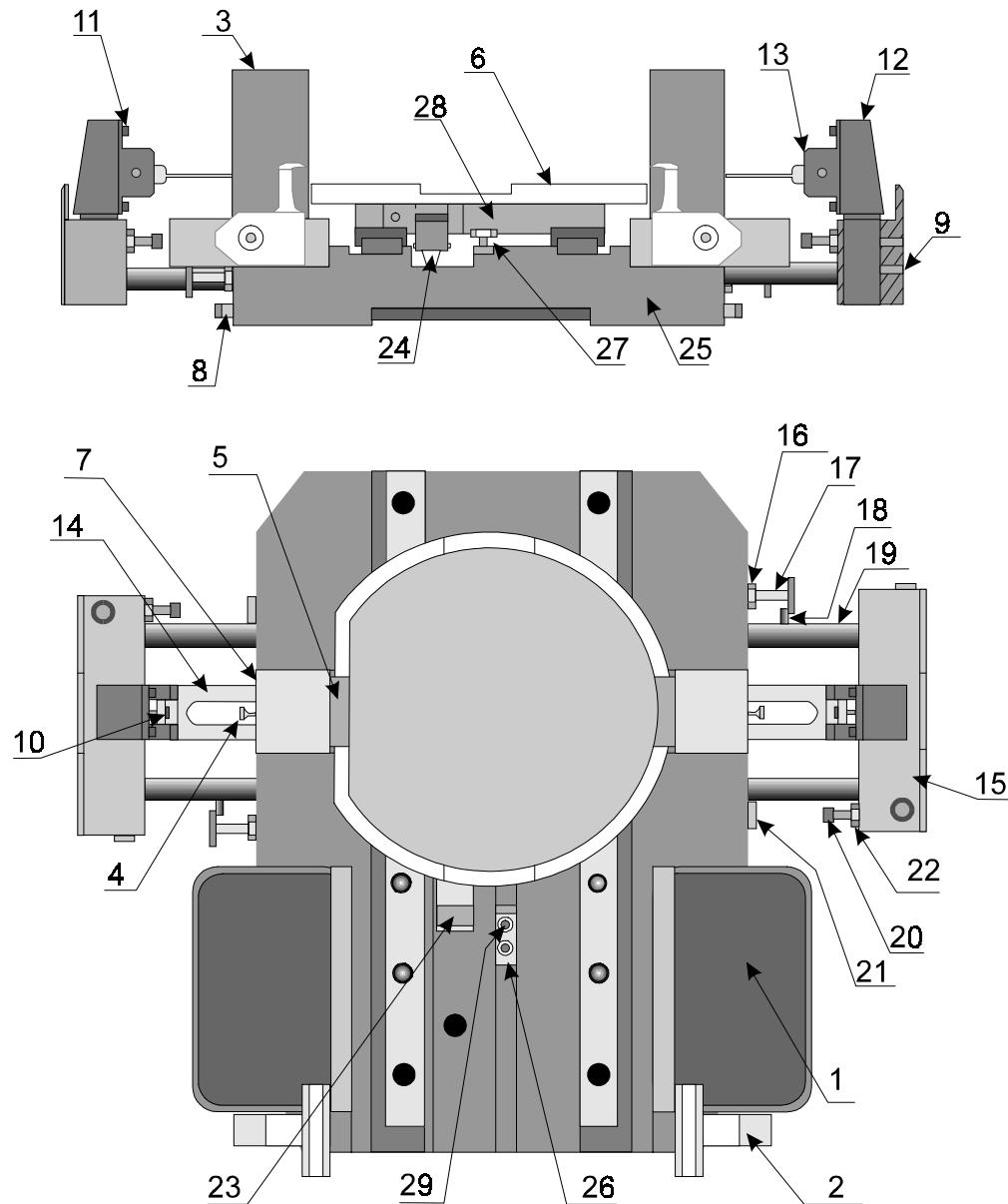


Figure 4 — 1 Semi-automatic CV—Tool, Side & Top View

Requirements

For performing the calibration you will require:

- One Dummy Wafer
- One CV—Mask
- The following tools:

One set of standard Inch Allen wrenches (up to 3/16")

One set of standard Metric Allen wrenches (up to 3)

Small flat head screwdriver

7/16" wrench

4.2 Cassette Base Adjustment

The following adjustment procedure achieves alignment of the clips cassette base to the Teflon base upper plate on both sides of the CV—Tool, so clips slide easily onto the mask and wafer.

Preparation

- Remove the clips cassette (3) from the cassette base (5).
- Place the CV—Mask and then the dummy wafer on the Teflon base (6).

Adjustment

1. Loosen the two screws (7) passing through the cassette base (5), located at the lift screw button (8) side.
2. Using the lift screw button (8), lift or lower the cassette base until the pushing fork height (14) is adjusted to the Teflon base upper plate.
3. Tighten the two screws (7).

4.3 Pushing Fork Alignment

Adjust the pushing fork so it is parallel to the Teflon base upper plate.

Preparation

- Remove the clips cassette (3) from the cassette base (5).
- Place the CV—Mask and then the dummy wafer on the Teflon base (6).

Alignment

A full alignment is achieved by using adjusting screws (9) (two screws), (10) (two screws) and (11) (four screws), alternately, on both sides of the pushing system (12, 13, 14) as follows:

1. Release the two adjusting screws (9) located at the axles holder (15).
2. Press the pushing system inward.
3. At this state, with the pushing fork (14) sliding over the cassette base plate, tighten the two adjusting screws (9).
4. Release the pushing system and check that the pushing fork moves back and forth freely several times.
5. If the pushing fork motion is not completely smooth or if a height difference along the pushing fork is observed, further adjust the pushing fork using adjusting screws (10).
6. While adjusting with screws (10), align the pushing fork to the cassette base upper plate (until parallel) with the four adjusting screws (11) located on the pushing system.
7. Repeat all the above steps until full alignment is achieved.

4.4 Pushing System Stoppers Adjustment

Repeat the following steps on both sides of the CV—Tool.

4.4.1 Pushing System Backward Motion

Preparation

- Remove both Teflon grippers (2) and clip trays (1).
- Remove the clips cassette (3) from the cassette base (5).

Adjustment

Adjust the pushing fork so it overlaps the cassette base upper plate by 1.5mm.

1. Release the locking screw nut (16) and adjust the stopping screw (17) so the pushing fork (14) overlaps the cassette base by 1.5mm and is stopped by the small pin (18) protruding from the axis (19).
2. Tighten the screw nut so the axis is affixed.
3. Reinstall the CV—Tool.

4.4.2 Pushing System Forward Motion

Preparation

- Place the CV—Mask and then the dummy wafer on the Teflon base (6).

Adjustment

In order to perform the following adjustment, position the pushing fork so it almost touches the wafer (~ 0.4mm apart).

1. Press the pushing holder so the pushing fork (14) drives the clips in the cassette onto the wafer.
2. Adjust screw (20) so it touches the stopper pin (21), ensuring that the pushing fork is not touching the wafer.
3. Tighten screw (20) using the screw nut (22).

4.5 Teflon Base Stoppers Adjustment

Repeat the following steps for forward and backward stopper plates.

1. Press the stopper fork (23) and position the wafer Teflon base (6) so the CV—Mask groove is located exactly between the two cassettes (3).
2. Release the stopper fork (23) until the fixing rod (24), which is under pressure of the stopper spring, enters the conical hole located at the CV—Tool base (25).
3. In this state:
 - Move the stopper plate (26) until it touches the stopper pin (27) located at the middle plate (28) bottom part.
 - Move the Teflon plate over to the other side (forward), position the Teflon base between the two clip trays, and tighten the stopper plate (26), using two screws (29).

5.0 MAINTENANCE

5.1 Semi-automatic CV—Tool

Clips

Clips accumulating in the used clips trays should be disposed of from time to time:

1. Remove the two Teflon grippers holding the trays.
2. Slide out the two trays of clips.

Changing Cassettes

When the cassette is empty, change cassettes:

1. Push the pin and remove the cassettes.
2. Install new cassettes.

6.0 SPARE PARTS AND ACCESSORIES

Order spare parts and accessories from Persys.

When ordering please state the following for each required part:

- Part Number
- Description of part

The spare parts listed below are available for the Manual and Semi-automatic CV—Tools:

ITEM NUMBER	PART NAME	PART NUMBER
1	Teflon Grippers	CV.1.227
2	Teflon Base	CV.1.202 (or other)*
3	Clips Pushing	CV.1.211 (or other)*

**NOTE: When ordering please state CV—Mask type, size, and position of mask on wafer.*